BILL & MELINDA GATES *foundation*

October 5, 2009

Ms. Marlene H. Dortch
Federal Communications Commission
The Portals, TW-A325
445 12th Street SW
Washington, DC 20554

Re: Notice of *Ex Parte* Presentation – GN Docket 09-51,
A National Broadband Plan for Our Future

Dear Ms. Dortch:

In accordance with Section 1.1206(b) of the Commission's rules, we hereby provide notice that on Thursday, October 1, 2009, I met by phone, and John Windhausen, Coordinator of the Schools, Health and Libraries Broadband Coalition met in person, with Blair Levin, Executive Director of the Commission's Omnibus Broadband Initiative ("OBI"), Dr. Carlos Kirjner, Senior Advisor to the Chairman on Broadband, and Steven Rosenberg, Infrastructure Manager in the Office of Strategic Planning and Policy. We distributed and discussed the attached cost model that estimates the costs of providing fiber optic connectivity to anchor institutions. Please feel free to contact me with any further questions.

Respectfully,

Jill Nishi
Deputy Director – U.S. Libraries
Bill & Melinda Gates Foundation

Cc:.
Blair Levin (Blair.Levin@fcc.gov)
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Preliminary Cost Estimates on Connecting Anchor Institutions to Fiber

September 25, 2009

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Notes on Analysis

- The attached analysis provides a preliminary cost estimate for providing fiber optic connectivity to anchor community institutions–specifically, public schools, public libraries, hospitals and community colleges. These estimates, based on data currently available to the public, are not definitive. In submitting this analysis, we seek to assist federal agencies in their efforts to deploy broadband technologies more broadly and to encourage others with greater expertise in this area to come forward with additional data and information that can be used to improve upon this preliminary assessment.

- Estimates in this document are for transport only networking and are exclusive of costs associated with network management and network intelligence.

- Estimates are for last mile fiber costs to community institutions. No estimates of non-last mile or backhaul capacity requirements were made.

- This analysis is limited to the cost of installing fiber connections and does not assess the cost of other non-fiber technology alternatives (e.g. MSO coax, FTTN or wireless technologies).

- Finally, this analysis does not include site-specific estimates for any given region or a detailed understanding of network topology to create a more accurate bottoms-up estimate.

PRELIMINARY COST ESTIMATES

Installing fiber to all anchor community institutions may cost $5-10 billion, with range driven by unknown site-specific factors in fiber deployment costs

	Thousands of locations						$ Thousands		$ Billions	
Population density[1]	Hospitals	Public libraries	Public schools (K-12)	Community colleges	Total institutions	Institutions assumed w/out fiber[4]	Low-end fiber cost per site[2]	High-end fiber cost per site[2]	Low-end total fiber cost[4]	High-end total fiber cost[4]
Dense Urban	0	1	5	0	6	80%	15	65	0.1	0.3
Urban	1	2	13	0.1	16	80%	15	65	0.2	0.9
Suburban	1	6	24	0.4	31	80%	35	205	0.9	5.2
Rural	4	8	57	0.4	69	80%	65	65[3]	3.7	3.7
Total	6	17	99	1.0	123	80%	15 - 205		4.9-10.1	

1 Determined by zip code population density: Rural: <1,000 persons per square mile, Suburban: between 1,000 and 4,000, Urban: between 4,000 and 10,000, and Dense Urban: >10,000. Some locations (305 hospitals and 446 libraries) did not match zip codes in the most recent GIS database, and have been assumed to have the same distribution as the other locations

2 Low-end cost based on aerial installation with 30% new poles, while high-end cost assumes 40% aerial and 60% trenching

3 Low-end costs only assumed here since trenching would be cost-prohibitive; other technologies likely more relevant if not aerial fiber

4 Assumed 20% of non-libraries already have fiber available, based on the percentage (19%)of U.S. commercial buildings connected to fiber with over 20 employees. For public libraries,13% are assumed to have fiber and were adjusted as such. See p. 5.

Sources: National Center for Education Statistics; InfoUSA; American Hospital Directory; TVA Rural Studies; CANARIE Inc.; Outside Plan Consulting Inc.; FCC; Vertical Systems Group; company interviews and websites

PRELIMINARY

Installation costs per site may range from $10,000 to $200,000 depending on deployment technique and investment shared with other buildings[4]

	Average loop length[1] feet	Low-end fiber deployment cost[2] $/foot	High-end fiber deployment cost[2] $/foot	Total cable cost[4] $ Thousands	Termination cost[3] $ Thousands	Total cost per site $ Thousands
Urban	3,000	2-4 (aerial)	30-50 (40% aerial, 60% trenching)	10-60	5	15-65
Suburban	10,000	2-4 (aerial)	30-50 (40% aerial, 60% trenching)	30-200	5	35-205
Rural	20,000	2-4 (aerial installation, 30% new poles)	N/A (trenching is cost prohibitive)	60	5	65

1 iDate; Bruce L. Egan, "Improving Rural Telecommunications Infrastructure", TVA Rural Studies, http://www.rural.org/workshops/rural_telecom/egan/4.htm
2 Outside Plan Consulting Inc.; company websites
3 CANARIE Inc., "Community Condo Fiber Networks", February 2001, http://www.canarie.ca/canet4/library/customer/ccfn.pdf
4 Assume 50% cost share on the high end. A large-scale installation would have lower costs per site, as many cables would serve multiple sites

PRELIMINARY

Investment costs of $0.7–1.7 billion to install fiber for 87% of public libraries currently without fiber

Population density[1]	Public libraries: Thousands of locations; Percent within geography — Total	With fiber[2]	Needs fiber	$ Thousands: Low-end fiber cost per site[3]	$ Thousands: High-end fiber cost per site[3]	$ Billions: Low-end total fiber cost	$ Billions: High-end total fiber cost
Dense Urban	1	0.3 (30%)	0.7	15	65	<0.1	<0.1
Urban	2	0.6 (30%)	1.4	15	65	<0.1	0.1
Suburban	6	0.9 (15%)	5.1	35	205	0.2	1.0
Rural	8	0.4 (5%)	7.6	65	65[4]	0.5	0.5
Total	17	2.2 (13%)	14.8	15 - 205		0.7 - 1.7	

1 Determined by zip code population density: Rural: <1,000 persons per square mile, Suburban: between 1,000 and 4,000, Urban: between 4,000 and 10,000, and Dense Urban: >10,000. Some locations (305 hospitals and 446 libraries) did not match zip codes in the most recent GIS

2 Of the 2,229 library outlets that reported a Fiber connection 41% are urban (908), 41% are suburban (905), 16% are rural (366), and 2% are unknown (50); *Gates Foundation / LRW –National Broadband Assessment, 2009.*

3 Low-end cost based on aerial installation with 30% new poles, while high-end cost assumes 40% aerial and 60% trenching

4 Low-end costs assumed here since trenching would be cost-prohibitive; other technologies likely more relevant if not aerial fiber